Implementation Project Tables

The recommedations set forth in this report are intended for the use of DCR, MassDOT and the municipalities that line the Charles River as a blueprint for moving forward and to help meet the recent call of Massachusetts Secretary of Transportation Richard Davey to triple walking and bicycling in the Commonwealth.

The recommendations are conceptual in nature and will require further analysis and study before moving forward to implementation. The following summary tables categorize each measure by order of magnitude costs, timeline, and jurisdiction. Projects which have been identified as both early to mid-term actions and low to medium cost are listed as priority projects for municipalities and state agencies to act upon in the near future.

The variety of projects presented in this report will help move Greater Boston closer to becoming a truly multi-modal region and will help create a model for integrating green infrastructure that connects people and nature.

Priority Projects

A. UPPER CHARLES RIVER BASIN (GALEN ST BRIDGE TO ELIOT BRIDGE)

PROJECT AREA/DESCRIPTION	*DESCRIPTION*	*JURISDICTIONAL INVOLVEMENT*
Watertown Square Intersection	*Shared lane markings on Charles River Rd and N Beacon St to continue bike lanes through the intersection*	*Watertown*
Irving Street / Charles River Road	*New crossing with pedestrian signal, entry node to path with art, seating, etc.*	*DCR, Watertown*
N. Beacon Street / Charles River Road	*Improvements to crosswalks and widen path to 10 feet at pinch point*	*DCR, DOT*
Arsenal Mall and Arsenal Park Path	*Path connection with new crosswalk between Arsenal Street and the N. Beacon Street Bridge*	*DCR, Watertown*
N. Beacon Street Bridge (north end)	*Pedestrian actuated signal; improve crosswalks*	*DCR, DOT*
N. Beacon Street Bridge	*Lane reduction, new bike lanes or cycle tracks*	*DCR*
Community Rowing Launch Site	*Improve path visibility at boat launch*	*DCR*
North Beacon St Bridge (south end)	*Improve path crossing*	*DCR, DOT, City of Boston*
Arsenal Bridge (south end)	*Improve crosswalks and curb ramps at path crossing; remove or tighten free-right turn lanes*	*DCR, DOT, City of Boston*
Soldiers Field Road parking lot (east of Western Avenue)	*Improve path connection through parking lot; improve crosswalk*	*DCR*
Everett Street at Soldiers Field Road	*New crosswalks across Soldiers Field Road*	*DCR, City of Boston*

B. MIDDLE CHARLES RIVER BASIN (ELIOT BRIDGE TO BU BRIDGE)

Memorial Drive at Hawthorn Street	*Enhanced crosswalk; potential entry node to river with art, seating, etc.*	*DCR, City of Cambridge*
JFK Street	*Bike lanes from Anderson Bridge to Eliot Street*	*City of Cambridge*
Dewolfe Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Mt. Auburn Street)*	*City of Cambridge*
River Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Putnam Avenue)*	*City of Cambridge*
Path improvements along Memorial Drive	*Raised crosswalks along path at driveways, widen path to 10 ft between River Street Bridge and BU*	*DCR, City of Cambridge*
Path along Soldiers Field Road (west of Anderson Bridge)	*Improve path crossings to be more visible at driveways to boathouse (potential raised crosswalk)*	*DCR*

C. LOWER CHARLES RIVER BASIN (BU BRIDGE TO CRAIGIE BRIDGE)

Memorial Drive Rotary at BU Bridge	*Colored bike lanes in conflict areas, signage and curb adjustments*	*DCR, City of Cambridge*
Memorial Drive / Ames Street	*Improve crosswalks; proposed pedestrian actuated signal*	*DCR, City of Cambridge*
Path west of Longfellow Bridge	*Add wayfinding signage to direct bicyclists/pedestrians to and from the Longfellow Bridge*	*DCR, City of Cambridge*
Longfellow Bridge (Cambridge side)	*Improve crosswalks at on/off ramp from bridge to Memorial Drive/Land Boulevard*	*DCR, City of Cambridge*
Commonwealth Avenue / BU Bridge	*Improve all crosswalks; potential two-stage left turn queue box for bikes*	*DOT, City of Boston*
Boylston Ave to Beacon Street via Charlesgate East ramp	*Sidewalk widened to shared-use path, improved crossings (part of proposed Charlesgate connection)*	*DCR, City of Boston*
Beacon Street to Harvard Bridge	*New crosswalk, add curb extension to remove slip lane; proposed path connection under Storrow Drive ramp and around gatehouse*	*DCR, City of Boston*
Harvard Bridge / Storrow Dr WB off-ramp	*New traffic signal and crossings (part of proposed Charlesgate connection)*	*DCR, DOT, City of Boston*
Beacon Street / Massachusetts Ave	*Improve crosswalks and other intersection improvements (part of proposed Charlesgate connection)*	*DCR, City of Boston*
Dartmouth Street	*Bike/ped ROW and streetscape improvements; add counterflow bike lane to improve access to overpass*	*City of Boston*
Charles Circle	*Bike improvements: bike lanes, shared lane markings, green bike lanes in conflict areas, etc.*	*DCR, DOT, City of Boston*
Leverett Circle	*Improvements to existing crosswalk, new crosswalk, and other at-grade improvements*	*DCR, DOT, City of Boston*

D. NEW CHARLES RIVER BASIN (CRAIGIE BRIDGE TO NORTH STATION)

North Station to Martha Road connection	*New path connection between North Station and Martha Road, including wayfinding signage*	*City of Boston*
Nashua Street at North Station	*Improve bike wayfinding between North Station and the Charles River*	*City of Boston*

All Recommended Projects | Sections A - C

UPPER CHARLES RIVER BASIN
(GALEN ST BRIDGE TO ELIOT BRIDGE)

MAP SECTION	PROJECT #	PROJECT AREA/DESCRIPTION	DESCRIPTION	PRIORITY PROJECT	TIMELINE: EARLY ACTION (1-2 yrs)	TIMELINE: MID TERM (3-6 yrs)	TIMELINE: LONG RANGE (>6 yrs)	JURISDICTION: MASS DCR	JURISDICTION: MASS DOT	JURISDICTION: CITY OF BOSTON	JURISDICTION: CITY OF CAMBRIDGE	JURISDICTION: CITY OF NEWTON	JURISDICTION: TOWN OF WATERTOWN	JURISDICTION: OTHER	COST: LOW	COST: MEDIUM	COST: HIGH	POTENTIAL FUNDING ASSISTANCE: MIT	POTENTIAL FUNDING ASSISTANCE: HARVARD	POTENTIAL FUNDING ASSISTANCE: NON-PROFIT FOUNDATION	POTENTIAL FUNDING ASSISTANCE: OTHER	ADDITIONAL NOTES
		NORTH SIDE (WATERTOWN - CHARLES RIVER RD - GREENOUGH BLVD)																				
A	1	Watertown - Main Street	*Adjust vehicular travel lane widths to accommodate bike lanes*		●								●		●							
	2	Watertown Square Intersection	*Shared lane markings on Charles River Road and N. Beacon Street to continue bike lanes through the intersection*	●	●								●		●							
	3	Galen Street Bridge (north end)	*Entry node to path with art, seating, etc.; improved crossings through intersection*			●		●					●			●						
	4	Park between Riverside Street and Charles River Road	*Path from Riverside Street to primary riverfront path; improved crossings*			●		●					●			●						
	5	Irving Street	*Bike/ped ROW and streetscape improvements (from Charles River Road to Mt. Auburn Street)*			●		●					●		●	●					●	
	6	Irving Street / Charles River Road	*New crossing with pedestrian signal, entry node to path with art, seating, etc.*	●		●		●					●			●					●	Coordinate with the Perkins School for the Blind
	7	Riverside Street from Irving Street to Perkins School	*Bike/ped ROW and streetscape improvements*			●							●		●	●					●	
	8	Beechwood Avenue and Paul Street	*Bike/ped ROW and streetscape improvements (from Charles River Road to N. Beacon Street)*			●							●		●	●						
	9	Watertown Square to North Beacon Street	*Path improvements proposed in Watertown Riverfront Park Restoration Plan*				●	●									●					
	10	Charles River Road (various locations)	*New crosswalks to access river at Wheeler Lane, Beechwood Avenue and Paul Street*			●		●					●		●							
	11	Charles River Rd between Bay St & Watertown Yacht Club	*Complete sidewalk on north side of Charles River Road*			●		●					●			●						
	12	N. Beacon Street / Charles River Road	*Improvements to crosswalks and widen path to 10 feet at pinch point*	●		●		●	●							●						
	13	Arsenal Mall and Arsenal Park Path	*Path connection with new crosswalk between Arsenal Street and the N. Beacon Street Bridge*	●		●		●					●	●		●						- Collaborate with Arsenal Mall (private property)
B	1	Arsenal Street	*Bike/ped ROW and streetscape improvements from School Street to the Arsenal Bridge*				●						●		●	●						
	2	Talcott Avenue	*Bike/ped ROW and streetscape improvements*				●						●		●	●						
	3	N. Beacon Street Bridge (north end)	*Pedestrian actuated signal; improve crosswalks*	●		●		●	●							●						
	4	N. Beacon Street Bridge	*Lane reduction, new bike lanes or cycle tracks*	●		●		●							●							
	5	Arsenal Street between Coolidge Ave and Greenough Blvd	*Widen/improve sidewalk*				●						●			●						
	6	Greenough Blvd at Arsenal Street (western intersection)	*Improve crosswalk*			●		●	●				●		●						●	
	7	Arsenal Street at Greenough Blvd (eastern intersection)	*Improve crosswalks; potential reconfiguration of intersection*			●		●	●		●					●					●	Potential involvement of Solomon Foundation
C	1	Greenough Blvd from Arsenal Street to Eliot Bridge	*Road diet and parkland expansion*			●		●	●		●		●			●	●				●	
	2	Grove Street	*Bike/ped ROW and streetscape improvement (from Greenough Blvd. to future Waterown Path extension)*			●		●					●			●						
	3	Path at Grove Street crossing	*Entry node to the river with art, seating, etc.*				●	●					●			●						
		SOUTH SIDE (NEWTON -SOLDIERS FIELD ROAD - BRIGHTON)																				
	14	Galen Street Bridge (south end)	*Improve path visibility; improve crossing*			●		●	●				●		●							
	15	Watertown Street and Aldrich Street	*Bike/ped ROW and streetscape improvements (from Galen Street to Casey Park)*			●							●		●							
	16	Water Street	*Bike/ped ROW and streetscape improvements (from Galen Street to Nonantum Road)*			●							●		●							
A	17	Hunt Street/Maple Street	*Bike/ped ROW and streetscape improvements (from Galen Street to Nonantum Road)*			●						●	●			●						
	18	Jefferson Street	*Bike/ped ROW and streetscape improvements (from Galen Street to Maple Street)*			●						●				●						
	19	Nonantum Road (various locations)	*Improvements to bicycle transition from roadway to path adjacent to Nonantum Road (Water Street, Maple Street and Brook Street intersections)*			●		●	●			●	●			●						
	20	Nonantum Rd at Maple Street	*Potential location for new bike/ped bridge across river (located above culvert)*				●	●				●	●				●				●	- Coordinate with Mass. Water Resource Authority
	21	Nonantum Rd at Charlesbank Rd	*Potential new signal*		●			●								●						
B	8	Brooks Street	*Bike/ped ROW and streetscape improvements (Nonantum Road to Washington Street)*		●			●		●						●						
	9	Community Rowing Launch Site	*Improve path visibility at boat launch*	●	●			●								●						
	10	N. Beacon Street Bridge (south end)	*Improve path crossing*	●	●			●	●	●						●						
	11	N. Beacon Street Bridge (south end)	*Add crossing from south end of bridge to pool across Nonantum Road*				●	●	●	●						●						
	12	Soldiers Field Road connection to Parsons Street	*New crossings from river path to Parsons Street (in conjunction with new path connection); includes study for new signal at crossing of Soldiers Field Road; includes entry node to the river with art, seating, etc.*			●		●	●	●							●			●		
	13	Birmingham Parkway	*New path connection between Parsons Street and N. Beacon Street along the parkway, new crosswalks at N. Beacon Street signal*				●	●		●							●					
	14	N. Beacon Street	*Bike/ped ROW and streetscape improvements (from bridge to Birmingham Parkway)*				●	●		●							●					
	15	Parsons Street	*Bike/ped ROW and streetscape improvements (from N. Beacon Street to Washington Street)*				●	●		●							●					
	16	Arsenal Bridge (south end)	*Improve crosswalks and curb ramps at path crossing; remove or tighten free-right turn lanes*	●		●		●	●	●						●	●				●	
	17	Soldiers Field Road at Western Ave/Arsenal Bridge	*New crosswalks*			●		●	●	●						●					●	
	18	Birmingham Parkway from N. Beacon to Lincoln Street	*Road diet and/or path along north side of parkway*			●		●	●	●							●	●			●	Possible coordination with New Balance Campus Master Plan
	19	Birmingham Parkway from Lincoln Street to Western Ave	*Bike/ped ROW and streetscape improvements*			●		●	●	●						●					●	
	20	Intersection of Leo M Birmingham Pkwy & Lincoln Street	*Improve existing crosswalks; add crosswalks across the Parkway*			●		●	●	●						●					●	
	21	Market Street	*Bike/ped ROW and streetscape improvements (from N. Beacon Street to Birmingham Parkway)*			●		●	●	●							●				●	
C	4	Western Avenue	*Bike/ped ROW and streetscape improvements (from Birmingham Parkway to Everett Street)*		●					●							●					
	5	Soldiers Field Road parking lot (east of Western Avenue)	*Improve path connection through parking lot; improve crosswalk*	●	●			●								●						
	6	Telford Street	*Bike/ped ROW and streetscape improvements (from pedestrian overpass to Western Avenue)*		●					●						●						
	7	Everett Street	*Bike/ped ROW and streetscape improvements (from Soldiers Field Road to Western Avenue)*			●				●						●						
	8	Everett Street at Soldiers Field Road	*New crosswalks across Soldiers Field Road*	●	●			●		●						●						
	9	Soldiers Field Road / Herter Park	*New path from Soldiers Field Road/Everett Street to existing path network in Herter Park; entry node to river with art, seating, etc.*			●		●	●	●							●					
	10	Soldiers Field Road / Smith Playground	*Potential new crosswalk at Soldiers Field Road from Smith Playground to Herter Park; includes study to incorporate future signal*				●	●	●	●							●			●		

All Recommended Projects | Sections D - E

MIDDLE CHARLES RIVER BASIN
(ELIOT BRIDGE TO BU BRIDGE)

MAP SECTION	PROJECT #	PROJECT AREA/DESCRIPTION	DESCRIPTION	PRIORITY PROJECT	TIMELINE: EARLY ACTION (1-2 yrs)	TIMELINE: MID TERM (3-6 yrs)	TIMELINE: LONG RANGE (>6 yrs)	JURISDICTION: MASS DCR	JURISDICTION: MASS DOT	JURISDICTION: CITY OF BOSTON	JURISDICTION: CITY OF CAMBRIDGE	JURISDICTION: CITY OF NEWTON	JURISDICTION: TOWN OF WATERTOWN	JURISDICTION: OTHER	COST: LOW	COST: MEDIUM	COST: HIGH	POTENTIAL FUNDING ASSISTANCE: MIT	POTENTIAL FUNDING ASSISTANCE: HARVARD	POTENTIAL FUNDING ASSISTANCE: NON-PROFIT FOUNDATION	POTENTIAL FUNDING ASSISTANCE: OTHER	ADDITIONAL NOTES
		NORTH SIDE (MEMORIAL DRIVE - WEST CAMBRIDGE)																				
D	1	Intersection at Memorial Drive & Gerry's Landing Road	*Improve existing crosswalks*			●		●	●		●				●	●						
	2	Gerry's Landing Road	*Bike/ped ROW and streetscape improvements - curb cuts and area sidewalks*			●		●	●		●				●							
	3	Memorial Drive at Sparks Street	*New path connection from Sparks Street to parkland, including new crosswalk at Memorial Drive*				●	●			●				●						●	Potential interest from Mount Auburn Hospital
	4	Memorial Drive from Sparks Street to JFK Park	*Reduction of travel lanes with parkland expansion*				●	●	●		●						●				●	- Note: Assumes installation of traffic signal in separate process
	5	Memorial Drive at Hawthorn Street	*Enhanced crosswalk; potential entry node to river with art, seating, etc.*	●	●			●			●				●							
	6	Hawthorn Street from Mt Auburn St to Memorial Dr	*Bike/ped ROW and streetscape improvements*				●				●				●							
	7	University Road	*Bike/ped ROW and streetscape improvements (from JFK Park to Mt. Auburn Street)*			●					●				●							
	8	University Road to Memorial Drive	*Improved path connection to river*			●		●			●				●							
	9	Memorial Drive at JFK Park	*New crosswalk in conjunction with changes per project D-4*				●	●			●				●							
	10	JFK Street	*Bike lanes from Anderson Bridge to Eliot Street*	●	●						●				●							
	11	Dewolfe Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Mt. Auburn Street)*	●	●						●				●				●			
	12	Dewolfe Street at Memorial Drive	*Improve crosswalks; add entry node to river with art, seating, etc.*		●		●	●			●					●			●			
	13	John W. Weeks Bridge	*Improve Weeks Bridges for bicycle access and ADA compliance*				●	●			●			●		●	●		●			- Involvement of Mass. Historic Commission likely
	14	Memorial Drive between Dewolfe and Western Ave	*Widen sidewalk on Cambridge-side of Memorial Drive*				●	●			●					●						
	15	Memorial Drive between Dewolfe and Western Ave	*Lane reduction due to westbound left-turn lane onto Western Avenue Bridge*			●		●		●	●					●	●					
E	1	Memorial Drive and Western Ave	*Potential new crosswalk across Memorial Drive on the east side of intersection*		●			●	●		●				●							
	2	River Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Putnam Avenue)*	●	●						●				●	●						
	3	Pleasant Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Putnam Avenue)*			●					●					●						
	4	Parking lot enhancements	*Connection through parking lot and to river, primarily within City of Cambridge right-of-way*				●				●					●						
	5	Memorial Dr between Pleasant Street and Magazine Street	*Raised crosswalks at all parking lot entrances on the Cambridge side of Memorial Drive*			●		●			●					●						
	6	Path improvements along Memorial Drive	*Raised crosswalks along path at driveways, widen path to 10 ft between River Street Bridge and BU Bridge*	●		●	●	●			●					●	●					
	7	Magazine Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Massachusetts Avenue)*			●					●					●						
	8	Magazine Street at Memorial Drive	*Entry node to river with art, seating, etc.*				●	●			●				●	●						
		SOUTH SIDE (BRIGHTON - ALLSTON)																				
D	16	Eliot Bridge (East Side)	*Realign paths between underpass and bridge sidewalk to be ADA compliant*				●	●								●						
	17	Path along Soldiers Field Road (west of Anderson Bridge)	*Improve path crossings to be more visible at driveways to boathouse (potential raised crosswalk)*	●	●			●							●	●						
	18	Sinclair Weeks Bridge	*Improve overpass for bicycle access and ADA compliance*				●	●	●								●		●			- Involvement of Mass. Historic Commission likely
E	9	Cambridge Street	*Proposed bike lane/cycle track In coordination with Boston Bike Master Plan effort*			●			●	●					●	●						
	10	Path downstream of River Street Bridge	*Widen path to 10 ft with cantilever*			●		●	●							●	●					- Partial widening part of River Street Bridge design
	11	BU Bridge / Grand Junction Path	*Connection between the bridge and the Grand Junction Path*				●	●	●		●						●				●	- Potential interest from Boston University

All Recommended Projects | Sections F - H

LOWER CHARLES RIVER BASIN
(BU BRIDGE TO CRAIGIE BRIDGE)

MAP SECTION	PROJECT #	PROJECT AREA/DESCRIPTION	DESCRIPTION	PRIORITY PROJECT	TIMELINE: EARLY ACTION (1-2 yrs)	TIMELINE: MID TERM (3-6 yrs)	TIMELINE: LONG RANGE (>6 yrs)	JURISDICTION: MASS DCR	JURISDICTION: MASS DOT	JURISDICTION: CITY OF BOSTON	JURISDICTION: CITY OF CAMBRIDGE	JURISDICTION: CITY OF NEWTON	JURISDICTION: TOWN OF WATERTOWN	JURISDICTION: OTHER	COST: LOW	COST: MEDIUM	COST: HIGH	POTENTIAL FUNDING ASSISTANCE: MIT	POTENTIAL FUNDING ASSISTANCE: HARVARD	POTENTIAL FUNDING ASSISTANCE: NON-PROFIT FOUNDATION	POTENTIAL FUNDING ASSISTANCE: OTHER	ADDITIONAL NOTES
		NORTH SIDE (CAMBRIDGEPORT - MIT - EAST CAMBRIDGE)																				
F	1	Memorial Drive Rotary at BU Bridge	*Colored bike lanes in conflict areas, signage and curb adjustments*	●	●			●			●				●	●						
	2	Path east of BU Bridge	*Widen sidewalk/path between BU Bridge and BU Boathouse*			●		●			●					●					●	- Potential involvement of Boston University
	3	Vassar Street at Amesbury Street	*Direct bike/ped traffic on Vassar to Amesbury St through signage and other enhancements*			●					●				●			●				
	4	Amesbury Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Vassar Street)*			●					●				●			●				
	5	Amesbury Street at Memorial Drive	*Improve crosswalks; add entry node to river; potential signal phase adjustments*			●		●	●		●				●	●		●				
	6	Connection to Fort Washington Park	*Improve connection from Vassar St to the park with a new crossing through parking lot*			●					●			●	●			●				- Potential involvement of private property owner
	7	Grand Junction Overpass	*Proposed railroad overpass connecting Pacific Street to Vassar Street per MIT plan*				●				●			●			●	●				
	8	Memorial Drive / Endicott Street	*Improve crosswalk on westbound side of Memorial Drive*		●			●			●				●							
	9	Memorial Drive / Massachusetts Ave	*Improve all crosswalks; potential reconfiguration of intersection to mitigate bike lane pinch point*		●			●	●		●				●			●				
G	1	Memorial Drive at MIT Sailing Pavilion	*Improve crosswalks*		●			●			●				●			●				
	2	Ames Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Main Street)*			●					●				●	●		●				
	3	Memorial Drive / Ames Street	*Improve crosswalks; proposed pedestrian actuated signal*	●		●		●			●					●		●				
	4	Wadsworth Street	*Bike/ped ROW and streetscape improvements (from Memorial Drive to Main Street)*		●						●				●	●		●				
	5	Memorial Drive / Wadsworth Street	*Improve crosswalks*		●			●			●				●			●				
	6	Path west of Longfellow Bridge	*Add wayfinding signage to direct bicyclists/pedestrians to and from the Longfellow Bridge*	●	●			●			●				●							
	7	Longfellow Bridge (Cambridge side)	*Improve crosswalks at on/off ramp from bridge to Memorial Drive/Land Boulevard*	●	●			●			●				●							
H	1	Path along Broad Canal/Cambridge Parkway	*New crosswalks for path crossing; new signals on Land Blvd.*				●	●			●					●						
	2	Binney Street / Edward H Land Boulevard	*New path connection to river; potential reconfiguration of intersection*				●	●			●					●						
	3	Path at Lechmere Canal	*Improve ADA access from path to bridge above*				●	●			●					●	●					
	4	Upstream-side of Museum of Science	*New bridges over the Lechmere Canal and the old Charles River lock per Rosales/Schlaman Bergmann design*				●	●		●	●						●				●	- Potential involvement of Museum of Science
		SOUTH SIDE (STORROW DR - BACK BAY - BEACON HILL)																				
F	10	Commonwealth Avenue / BU Bridge	*Improve all crosswalks; potential two-stage left turn queue box for bikes*	●	●		●		●	●					●						●	Potential involvement of Boston University
	11	Storrow Drive crossing below BU Bridge	*Potential new signal and crossing to connect BU Bridge stair with Esplanade*				●	●	●	●						●					●	
	12	Pedestrian overpass east of BU Bridge	*Make ADA compliant, may require replacement of bridge*				●	●	●	●						●	●				●	
	13	Silber Way	*Bike/ped ROW and streetscape improvements (from Comm Ave to Storrow overpass)*			●				●					●						●	
	14	Boylston Ave to Beacon Street via Charlesgate East ramp	*Sidewalk widened to shared-use path, improved crossings (part of proposed Charlesgate connection)*	●		●		●		●						●				●		Potential involvement of Solomon Foundation
	15	Beacon Street to Harvard Bridge	*New crosswalk, add curb extension to remove slip lane; proposed path connection under Storrow Drive ramp and around gatehouse (part of proposed Charlesgate connection)*	●		●		●		●						●				●		
	16	Harvard Bridge / Storrow Dr WB off-ramp	*New traffic signal and crossings (part of proposed Charlesgate connection)*	●		●		●	●	●						●				●		
	17	Beacon Street / Massachusetts Ave	*Improve crosswalks and other intersection improvements (part of proposed Charlesgate connection)*	●		●		●		●						●				●		
G	8	Beacon Street between Mass Ave and Berkeley Street	*Proposed bike lane/cycle track per City of Boston Bike Master Plan*		●					●					●							
	9	Fairfield Street	*Bike/ped ROW and streetscape improvements (from Beacon Street to Storrow Drive overpass)*		●					●					●							
	10	Fairfield Street overpass	*Entry node to river with art, seating, etc.*				●	●								●						
	11	Dartmouth Street	*Bike/ped ROW and streetscape improvements; add counterflow bike lane to improve access to overpass*	●	●					●					●							
	12	Charles Street	*Proposed bike lane/cycle track per City of Boston Draft Bike Master Plan (from Charles Circle to Beacon Street)*			●					●					●						
H	5	Charles Circle	*Bike improvements: bike lanes, shared lane markings, green bike lanes in conflict areas, etc.*	●	●			●	●	●					●							
	6	Blossom Street at Storrow Drive	*Entry node to river with art, seating, etc. at base of bike/ped overpass*				●	●								●					●	- Potential involvement of Mass General Hospital
	7	Leverett Circle	*Improvements to existing crosswalk, new crosswalk, and other at-grade improvements*	●	●			●	●	●					●	●						
	8	Leverett Circle	*Proposed pedestrian overpass*			●		●	●	●							●					

All Recommended Projects | Craigie Dam - North Station

NEW CHARLES RIVER BASIN
(CRAIGIE BRIDGE TO NORTH STATION)

MAP SECTION	PROJECT #	PROJECT AREA/DESCRIPTION	DESCRIPTION	PRIORITY PROJECT	TIMELINE: EARLY ACTION (1-2 yrs)	TIMELINE: MID TERM (3-6 yrs)	TIMELINE: LONG RANGE (>6 yrs)	JURISDICTION: MASS DCR	JURISDICTION: MASS DOT	JURISDICTION: CITY OF BOSTON	JURISDICTION: CITY OF CAMBRIDGE	JURISDICTION: CITY OF NEWTON	JURISDICTION: TOWN OF WATERTOWN	JURISDICTION: OTHER	COST: LOW	COST: MEDIUM	COST: HIGH	POTENTIAL FUNDING ASSISTANCE: MIT	POTENTIAL FUNDING ASSISTANCE: HARVARD	POTENTIAL FUNDING ASSISTANCE: NON-PROFIT FOUNDATION	POTENTIAL FUNDING ASSISTANCE: OTHER	ADDITIONAL NOTES
		NORTH SIDE (CAMBRIDGE - NORTH POINT PARK - CHARLESTOWN)																				
H	9	Charles River Dam Road to North Point Park	*Proposed inlet bridge per North Point Master Plan*				●	●			●						●				●	- Potential involvement of North Point developer
H	10	North of Industrial Park Road	*Further study needed: connection to Somerville Community Path Extension*			●		●			●			●		●						- Potential involvement of City of Somerville
H	11	Draw One Walkway	*Path connection adjacent to existing bridge between Spaulding Hospital/Nashua Street to the North Point Park*			●		●			●			●			●					
		SOUTH SIDE (WEST END - NORTH STATION - NORTH END)																				
H	12	Martha Road	*Bike/ped ROW and streetscape improvement per City of Boston Bike Master Plan (from Storrow Dr. to Causeway)*		●					●					●	●						
H	13	Nashua Street	*Bike/ped ROW and streetscape improvement; consider lane reduction (from Storrow Dr. to North Station)*		●			●		●					●	●						
H	14	North Station to Martha Road connection	*New path connection between North Station and Martha Road, including wayfinding signage*	●	●	●				●					●	●					●	Potential involvement of Delaware North Company
H	15	Nashua Street at North Station	*Improve bike wayfinding between North Station and the Charles River*	●	●					●					●						●	
H	16	Nashua Street Park connection to North Station	*Future South Bank Bridge project per DCR design contract*			●	●	●	●	●							●					

Appendix

Memorandum

To: Amy Getchell, MassDOT and Dan Driscoll, DCR

From: Phil Goff, Alta Planning + Design

CC: Cynthia Smith, Halvorson Design Partnership; Jerry Friedman, HDR; Shannon Simms, Alta Planning + Design

Date: September 20, 2012

Re: Proposed Pathway Crossing Signal and Crosswalk Analysis - Harvard Bridge and Charlesgate East/Beacon Street intersection

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The purpose of this study is to analyze the effects of installing or modifying signalized crossings at the intersections of 1) the Harvard Bridge (Massachusetts Avenue) / Storrow Drive exit ramp and 2) Charlesgate East / Beacon Street. These locations were chosen to accommodate pedestrian and bicycle accessibility and safety in conjunction with a proposed shared-use path connection from the edge of the Muddy River to the Harvard Bridge. The potential path alignment—currently being studied in a separate effort funded by the Solomon Foundation—runs through DCR parkland that sits between Storrow Drive's east and west-bound traffic lanes between the Harvard Bridge and the Bowker Overpass.

The traffic assessment was made of the two study locations using the Synchro/SimTraffic software package. Synchro is a traffic analysis tool which is capable of calculating the delay and level of service (LOS) for intersections and includes the option of incorporating the effects of pedestrian crossings in the signal timings and operations. SimTraffic is the micro-simulation component of Synchro which evaluates the operations of intersections by simulating motorists activity based on traffic counts, signal timings, etc. The PM peak hour volumes were used for the analysis,

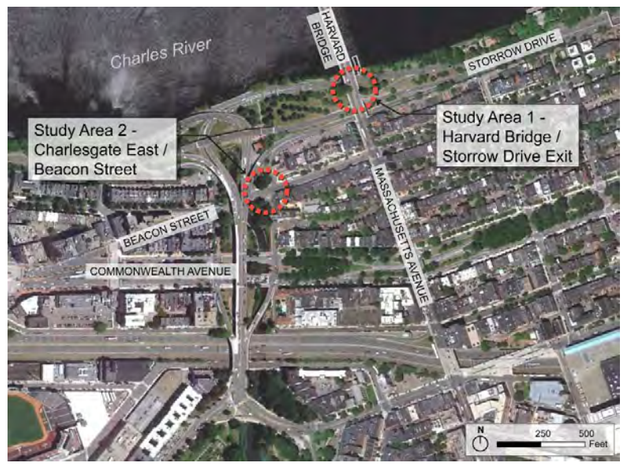

Figure 1: Study Area 1 and 2 in context

since this is typically a high vehicle volume hour and is also assumed to coincide with the largest pathway volume. Traffic volumes were obtained through existing studies of these intersections (courtesy of BTD) and supplemental counts taken during May 2012. The average intersection peak hour factor (PHF) and heavy vehicle percentage was used for each movement as well. These traffic volumes were used for both the existing and proposed condition to adequately compare the implications of the proposed alternatives. Traffic volumes do not take into account modest level of traffic increases between now and potential implementation.

1 Harvard Bridge / Storrow Drive Exit

The proposed pathway will cross the Harvard Bridge (Massachusetts Ave) at the Storrow Drive off-ramp intersection on the northbound bridge approach and the westbound approach from the off-ramp. Currently, both the northbound and southbound movements, across the Harvard Bridge, have free movement from Memorial Drive in Cambridge to Beacon Street in Boston. The westbound approach, via the Storrow Drive off-ramp, is one-way, stop controlled and right-turn-only movement.

This study addresses whether northbound queues caused by the addition of a traffic signal on Massachusetts Avenue will cause spillback into the intersection of Massachusetts Ave / Beacon St, located approximately 340 feet to the south.

In addition, queuing in the southbound direction at the Massachusetts Ave / Beacon St intersection is an existing concern, especially during events at Fenway Park and elsewhere. This study evaluated the potential for south-bound queues at the Massachusetts Ave / Beacon St intersection to interfere with the operations of the proposed signalized pathway crossing at the Harvard Bridge / Storrow Dr off-ramp intersection.

1.1 Existing Conditions

The Storrow Drive off-ramp currently has minimal delay and operates at LOS B conditions under stop control. Queuing is minimal at this intersection. The Massachusetts Ave / Beacon St intersection operates at an overall LOS B, with approximately 15 seconds of delay. The 95th percentile queues in the southbound direction are approximately 190 feet long, falling 150 feet short of the crossing proposed at the Storrow Drive off-ramp. Existing traffic volumes, LOS, delay and queues are shown in Table 1 below.

Figure 2: Existing circulation at Harvard Bridge / Storrow Dr off-ramp

Table 1: Existing Conditions

Harvard Bridge / Storrow Dr off-ramp (Existing)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-R	106	B	10.3	20
Massachusetts Ave / Beacon St (existing)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-LTTTR	707	C	21.2	130
NB –LTT	888	B	17.7	270
SB-TTR	1064	A	8.8	190
Overall		**B**	**15.1**	

Currently, pedestrian and bicyclist circulation takes place on the sidewalks and in the bike lanes along the Harvard Bridge. A ramp down to the Charles River Reservation Path system from the sidewalk on the east side of the bridge currently exists. Cyclists moving from the Esplanade up the ramp to the Harvard Bridge typically either ride around the existing crash barrier to access the bike lane going north, ride on the sidewalk heading north or south, or in some rare circumstances cross over the Harvard Bridge at the uncontrolled location where the off-ramp meets the bridge. If the proposed path were to be constructed in the DCR parkland just west of the bridge, a pedestrian/bike crossing would likely be warranted to provide access from the ramp down to the Esplanade to the new path and open space. If this path were built without a new signal and crossing of the bridge, it would both minimize use of the new path and parkland, and would entice more jay-walking at this location.

1.2 Proposed Signal Alternative 1

Proposed Signal Alternative 1 is a full signal with a pedestrian/bicycle (path-crossing) phase. The path-crossing phase would require a total of 29 seconds to allow pedestrians and bicyclists to cross Massachusetts Avenue safely at a crosswalk located across the northern edge of the intersection (see Figure 3). The right turning movement from Storrow Dr would be restricted by a solid red arrow during the path-crossing phase and a flashing red arrow during the Massachusetts Avenue through movement.

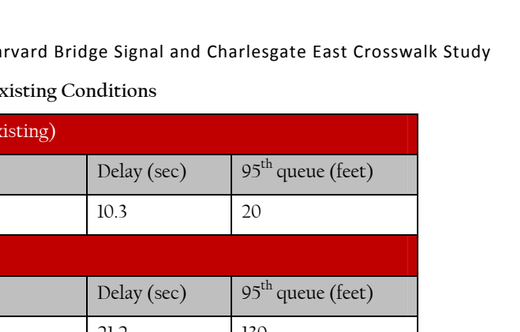

Figure 3: Aerial view of Harvard Bridge / Storrow Dr off-ramp Alternative 1

The signal would be coordinated with the signal at Massachusetts Ave / Beacon St, which would reduce delay slightly at both intersections. By linking the two signals, the red lights for southbound traffic can be timed so that vehicles are stopped at both signals at the same time. This will help to minimize queues from blocking the crosswalk on Harvard Bridge. In addition, queue detectors should be installed on the Storrow Drive off-ramp, to prevent back up onto Storrow Drive, as well as on northbound and southbound Massachusetts Avenue to prevent back up at the Massachusetts Avenue / Beacon St intersection and at the location of the proposed crossing.

Installing a signal at this intersection provides an overall LOS B, with 18 seconds of delay. Based on the Synchro results and SimTraffic simulation used for this Study, the 95th percentile queues in the northbound direction are expected to be approximately 230 feet, leaving a minimum 110 foot gap between the back of the queue and the intersection of Massachusetts Ave / Beacon St.

Table 2: Alternative 1

Massachusetts Ave / Storrow Dr (Alternative 1B)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-R	106	D	39.4	95
NB-T	856	C	20.7	230
SB-T	1064	B	14.0	230
Overall		**B**	**18.2**	
Massachusetts Ave / Beacon St (Alternative 1B)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-LTTTR	707	C	25.9	135
NB –LTT	888	B	15.4	300
SB-TTR	1064	A	2.2	20
Overall		**B**	**12.9**	

1.3 Proposed Signal Alternative 2

Proposed signal Alternative 2 also proposes a full signal with the pedestrian/bicycle crossing located across Massachusetts Avenue at the southern edge of the intersection with the Storrow Dr off-ramp (see Figure 4). The pedestrian phase again would be 29 seconds for the total phase length. Right turns from the Storrow Dr off-ramp will be allowed during through movements and the pedestrian phase.

Analysis showed that both intersections operate at LOS B, with less than 20 seconds of delay. Queuing in both the southbound and northbound directions would not block the existing intersections. The signal should be coordinated with the Massachusetts Ave /

Figure 4: Aerial view of Harvard Bridge / Storrow Dr off-ramp Alternative 2

Beacon St signal so that southbound traffic would be stopped at the Harvard Bridge / Storrow Dr signal at the same time or before the southbound traffic is stopped at the Massachusetts Ave / Beacon St intersection. This would reduce the chances of vehicles stopping in the proposed crosswalk across the Harvard Bridge. In addition, queue detectors would be installed on Massachusetts Avenue in both directions.

Table 3: Alternative 2

Massachusetts Ave / Storrow Dr (Alternative 2)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-R	106	A	6	35
NB-T	856	B	15.6	180
SB-T	1064	B	18.8	235
Overall		**B**	**16.8**	
Massachusetts Ave / Beacon St (Alternative 2)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-LTTTR	707	C	21.2	130
NB –LTT	888	B	17.7	270
SB-TTR	1064	A	9.5	190
Overall		**B**	**15.3**	

One item to note is that several illegal left-turn movements from the Storrow Dr off-ramp to Massachusetts Ave southbound were observed during traffic counts. To mitigate this, lane delineators and/or signage should be considered to restrict this movement so that vehicles avoid conflicts with pedestrians in the crosswalk (while bridge traffic is stopped).

1.4 Conclusion

Either of the two signalization alternatives proposed above for the shared-use pathway crossing of the Harvard Bridge will provide efficient pedestrian and bicycle accommodations without an adverse effect on traffic flows. Alternative 1, with a full coordinated signal, allows a single-stage crossing from the proposed path to the existing ramp down to the Esplanade. Vehicle traffic flow is less affected by Alternative 2, but this requires a two-stage crossing for pathway users wishing to cross from the proposed path to the Esplanade via the existing ramp. In either option, new overhead signs, advanced warnings that read "Do not block intersection", as well as advanced queue detectors are recommended.

Charles River Basin Connectivity Study: Harvard Bridge Signal and Charlesgate East Crosswalk Study

2 Charlesgate East / Beacon Street Intersection

2.1 Existing Conditions

The proposed pathway to the Harvard Bridge requires pedestrian/bicycle improvements at the Charlesgate East / Beacon Street intersection on the western side of the intersection in order to connect with the sidewalk/path adjacent to the Muddy River. The intersection is currently signalized with two exclusive through lanes and a through-right turn lane in the westbound direction (Beacon Street), and two through lanes and a left turn lane with a channelized island in the northbound direction (Charlesgate East). Both Charlesgate E and Beacon St are one-way streets. The intersection operates at an overall LOS B with approximately 10 seconds of delay in existing conditions. Existing traffic volumes, LOS, delay and queues are shown in Table 4 below.

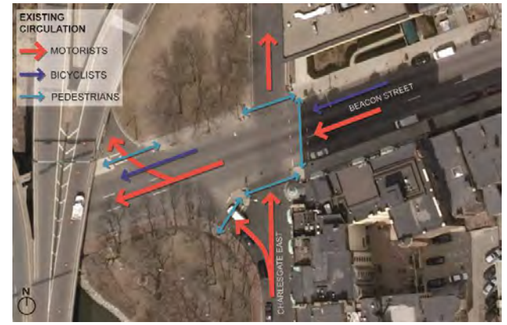

Figure 5: Existing circulation at Charlesgate East / Beacon Street

Currently, there is very little demand for pedestrians or cyclists to cross from the west side of Charlesgate East to the north side of Beacon Street. Those wishing to move east or west currently use the existing crosswalk on the east side of Charlesgate East at Beacon or the existing crosswalk at Charlesgate West at Beacon. A potential new path through the DCR property between the Bowker Overpass and the Harvard Bridge would create far more demand from pedestrians and bicyclists – especially those coming from the Back Bay Fens and the Emerald Necklace – to cross Beacon Street via a potentially enhanced path adjacent to the Muddy River. If this path were built without a new crosswalk and/or changes to the existing signal timing, it would both minimize use of the new path and parkland, and would entice more jay-walking at this location.

Table 4: Existing Conditions

Charlesgate E / Beacon St (existing)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-TTTR	564	B	10.7	55
NB-L	148	B	18.2	80
NB-TT	386	A	6.2	50
Overall		**B**	**10.1**	

2.2 Proposed Alternative 1

Two alternatives are proposed to accommodate a new crosswalk on the west side of the Charlesgate East / Beacon Street intersection. Crosswalk Alternative 1 is a two-stage crossing, allowing pedestrians to cross from the sidewalk/path adjacent to the Muddy River to the left-turn island, and then separately across Beacon Street (see Figure 6). The phase for the Beacon Street through movement would be set to provide sufficient crossing time, 24 seconds, for the crosswalk between the southern portion of the pathway and left-turn island. The northbound Charlesgate East through movement phase will also be set to provide sufficient time, 26 seconds, for pedestrians to clear the crosswalk across the west side of Beacon Street. Maximum recall, or full use of the allocated green time, is provided to allow the northbound left-turn movement to clear.

Figure 6: Aerial view of Charlesgate East / Beacon Street Alternative 1

The overall delay at the intersection using Alternative 1 would be increased by 8 seconds but would remain at LOS C. Both the westbound approach and northbound left turn movement would have increased delay of 10 to 15 seconds and operate at LOS C.

Table 5: Alternative 1

Charlesgate E / Beacon St (Alternative 1)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-TTTR	564	C	24.1	115
NB-L	148	C	26.6	120
NB-TT	386	A	5.3	55
Overall		**B**	**17.8**	

2.3 Proposed Alternative 2

Crosswalk Alternative 2 proposes eliminating the left-turn slip lane and island with a left-turn lane to provide a single-stage pedestrian crossing of Beacon Street (see Figure 7). Charlesagate East's traffic movement would be given 50 seconds of time, with the left turning movement held for the first 32 seconds of pedestrian crossing time. The final 18 seconds of this phase would prohibit pedestrian/bicyclist crossing, while giving a green arrow to left

Charles River Basin Connectivity Study: Harvard Bridge Signal and Charlesgate East Crosswalk Study

turning vehicles. However, this phasing would require taking green time from the westbound Beacon Street and northbound left movements. Phases for these movements would need to continue to be long enough to provide sufficient crossing time for pedestrians moving east-west across Charlesgate East.

The reallocation of green time to provide the single-stage crossing would increase delay on the westbound and northbound through movements, though both would still operate at LOS C. Overall, the intersection would operate at LOS B with 19 seconds of delay.

Figure 7: Aerial view of Charlesgate East / Beacon Street Alternative 2

Table 6: Alternative 2

Charlesgate E / Beacon St (Alternative 2)				
Movement	Volume	LOS	Delay (sec)	95th queue (feet)
WB-TTTR	564	C	25.2	120
NB-L	148	C	29.8	120
NB-TT	386	A	4.9	50
Overall		**B**	**18.7**	

2.4 Conclusion

Either of the two alternatives proposed above for the pathway crossing at Charlesgate East / Beacon Street will provide efficient pedestrian and bicycle accommodations with minimal adverse effect on traffic flows. Crosswalk Alternative 1 has less of an effect on vehicle delays, but requires some pedestrians and bicyclists to complete a two-stage crossing from the Muddy River sidewalk/path to the north side of Beacon Street. Crosswalk Alternative 2 provides a single-stage crossing of Beacon Street, with only a slight increase in vehicle delays over Alternative 1. Alternative 2 would also require a significant reconstruction of one corner of the intersection while Alternative 1 requires only crosswalk striping, retiming of the signal and enlargement of the existing left-turn traffic island.